Estes Workshop at the TeaP 2020 in Jena on
Multinomial-Processing-Tree Modeling: Basic Methods and Recent Advances

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Workshop Day 1: Basics of MPT Modeling (Saturday, March 21ˢᵗ, 13:00-18:45)

- 13:00 – 13:15: Introduction & Overview
- 13:15 – 14:30: Basics (Instructor: EE)
    - Introduction to standard MPT models (logic, examples, advantages, limitations)
    - Model development (model construction, paradigm, data structure, identifiability)
    - Parameter estimation (maximum likelihood, minimum χ^2, power-divergence statistics)
    - Model assessment (G^2, Pearson's χ^2, and the PD^λ family of goodness-of-fit statistics)
- *Break*
- 14:45 – 15:45: Application I (Instructor: EE, DH, & FM)
    - Introduction to multiTree (EQN syntax, data files, batch analysis)
    - Practical exercises
    - Optional: Order constraints
- *Break*
- 16:00 – 16:45: Advanced features of multiTree (Instructor: EE)
    - Identifiability concepts and checks provided by multiTree
    - A priori and post hoc statistical power analyses
    - Model selection (AIC, BIC, NML, and FIA criterion)
- *Break*
- 17:00 – 17:45: Substantive research questions and psychological theory (Instructor: FM)
    - Multinomial modeling of the implicit association test (IAT)
    - Model validation: Selective influence studies
    - Different models for different research questions
- *Break*
- 18:00 – 18:45: Application II (Instructor: EE, DH, & FM)
    - Workflow with multiTree: Developing and testing a new MPT model
    - Using advanced features in multiTree
    - Optional: Testing interactions (EE)

Workshop Day 2: Advances in MPT Modeling (Sunday, March 22nd, 9:00-17:00)

- 9:00 – 10:15: Bayesian hierarchical MPT modeling (Instructor: DH)
  - MPT models & heterogeneity
  - Hierarchical MPT models
  - Bayesian estimation with MCMC sampling
  - Adding continuous covariates
- *Break*
- 10:30 – 12:00: Application III (Instructor: DH)
  - Practical exercises on hierarchical MPT modeling using the R package TreeBUGS
  - Basics: Model fitting, convergence, plots, model fit
  - Advanced: Within-/between-subject comparisons, covariates, simulation
- *Noon Break*
- 13:30 – 15:00: MPT modeling of continuous data (Instructor: K. Christoph Klauer)
  - Categorizing continuous data into bins (MPT-RT models)
  - Modeling of branch-specific continuous distributions (GPT models)
  - Serial process model for response times (RT-MPT)
  - Short Illustration: R package rtmpt
- *Break*
- 15:30 – 17:00: Application IV (Instructor: DH, EE, & FM)
  - Questions and answers
  - Developing and testing (new) models suggested by the participants
  - Optional: Short illustration of modeling continuous data with histograms (MPT-RT) or mixture models (GPT)
  - Optional: Exercises on MPT modeling of response times (RT-MPT)